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## **SYSTEM AND METHOD FOR MANAGING DIGITAL RIGHTS AND CONTENT ASSETS**

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### **FIELD OF THE DISCLOSURE**

**[0001]** The present application relates generally to a system and method for managing digital rights and content assets.

### **BACKGROUND**

**[0002]** The number of sites on the Internet selling digital content is continuing to increase. The advent of file sharing created interest in digital music, and major record labels are attempting to set up commercial web sites to let consumers purchase digital music legitimately. Similarly, the movie studios are cautiously approaching delivering first release movies over the Internet as digital rights management systems improve. At the same time, consumers are using various devices to access the Internet. In addition to the personal computer, there are now personal video recording devices, set top boxes, hi-fi stereo systems, personal digital assistants, and cellular telephones that can access and play Internet content. It will soon become more difficult for a consumer to manage digital content assets as the diversity of sites and devices expands.

**[0003]** The consumer might lose the device for which a particular content file was intended and/or stored on, or may wish to play the same content purchased on a different device for which the media format of the content is incompatible. Accordingly, there is a need for a system and method to manage the digital content a consumer has purchased or acquired.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0004] FIG. 1 depicts an exemplary embodiment of a content broker hosting service and related systems.

[0005] FIG. 2 depicts an exemplary embodiment of a device profile table, and a media asset listing table to support managing the content a consumer has purchased.

[0006] FIG. 3 depicts exemplary methods and operation of the systems of FIG. 1 for the content broker hosting service to aggregate content titles from third party providers and facilitate the purchase of said content.

[0007] FIG. 4 depicts exemplary methods and operation of the systems of FIG. 1 for the content broker hosting service to respond to third party content providers when subscribers visit their web sites and request to purchase digital content.

[0008] FIG. 5 depicts exemplary methods and operation of the systems of FIG. 1 for the content broker hosting service to negotiate with third party providers.

### **DETAILED DESCRIPTION**

[0009] As consumers become more accustomed to obtaining movies, music, and software legitimately over the Internet, the ability to manage the licenses for, and storage of, their content will be desired. The ability for service providers to offer a hosted service that manages the purchase history and content storage for media purchased over a consumer's lifetime will benefit from a process for negotiating with the content owners for many purposes, including re-obtaining content that has been lost, changing the usage rights for the content, or obtaining a new data format for the content so it may be played on a device that was not originally intended when the content was purchased.

[0010] In a particular embodiment, a system is disclosed that includes a managed content broker service comprised of a single sign-on identity server, a broker module for obtaining or brokering content from third party sources, a storage area network for archiving digital content, and tables keeping track of the attributes of various devices and

the digital content assets that a user owns. The content broker service includes a web server providing an Internet portal with which the user can browse various offerings of digital content available from other third party providers. These content offerings may be obtained from third-party content providers via web services technology, in which a third-party service advertises the content that is available and the rights policies that can be purchased. An Internet portal aggregates content from multiple third party providers and makes such content available to the consumer. When the consumer decides to purchase content, the Internet portal communicates to the third party provider, via a web services framework, to obtain approval to issue the content along with a license key appropriate for the usage rights purchased by the consumer. The content broker maintains a history of the purchase, including a unique purchase ID and the original license key issued by the third party provider, so that if the content is lost or must be re-appropriated (e.g. to work on a new or different device) the content broker may negotiate with the third party provider to update the digital rights policies and obtain a new copy of the content if necessary.

**[0011]** In another particular embodiment, the consumer may browse the web sites of independent third party content providers directly. When the consumer decides to purchase content, the content provider ascertains the consumer's identity by "federating" a single sign-on account that the user has established. This single sign-on account permits the user to move amongst various, unrelated sites and use the same account name and password (or other security tokens) for authentication. The content broker process is housed with a single sign-on identity server and can provide additional credentials as requested by the third party content provider when a purchase request is invoked. The information shared includes definitions of how the content will be managed (e.g., whether content is to be downloaded directly to the device of the consumer or stored in a personal storage area network managed by the content broker hosting service). The information shared may also include specific functional details and features of the device the user will consume the content on (e.g. memory availability, screen resolution, media formats playable, etc.).

[0012] In another embodiment, a system to provide a content brokerage service is disclosed. The system includes an interface to a distributed computer network. The distributed computer network provides access to a remote content provider. The system also includes a content broker module coupled to the interface and a single sign-on identity service to authenticate a subscriber to a content brokerage service supported by the content broker module. The system further includes a memory including content asset information and device profile information associated with at least one subscriber to the content brokerage service.

[0013] In another embodiment a method of managing content is disclosed. The method includes receiving a request for modified content with respect to a first version of content distributed to a user, determining a content provider associated with the first version of content, communicating data associated with the distribution of the first version of content to the content provider, communicating a modified content request to the content provider and receiving a second version of the content and a second license key associated with use of the second version of the content.

[0014] In another embodiment, a method of managing media content is presented. The method includes authenticating a subscriber to a content brokering site of a computer network, providing device characteristics of a subscriber media device, receiving content site header data relating to media type from the remote content provider site and receiving media content and an associated license key allowing access to the media content from the remote content provider site. The device characteristics are communicated from the content brokering site to a remote content provider site.

[0015] FIG. 1 depicts an exemplary embodiment of a system including a single sign-on identity server 118, a content broker process 120, an optional web server 122, a network interface 124, content asset 112 and device profile 114 database tables, and disk and/or database storage 116 for raw content. The entire configuration is referred to as a hosted content broker service 110. The major computing components of the architecture are connected to the Internet via the network interface 124. The single sign-on server 118, content broker process server 120, and aggregated content web server 122 are all

physically connected through a data communications line 126. The data communications line 126 may be Ethernet cabling, power line networking components, or wireless (e.g. 802.11). The content broker process 120 has access to a database or other storage technique so that a content asset table 112 can be maintained which keeps a log of media content the user has purchased to date. In addition, a device profile table 114 maintains a list of the devices a consumer owns that can access the Internet or internal physical network for the purposes of retrieving and playing the media content. The device profile table 114 stores details on consumer devices including residential gateways, home servers, cable and satellite set top boxes, Internet ready DVD and hi-fi stereo components, MP3 players, etc.

[0016] FIG. 2 depicts an exemplary embodiment of two table structures maintained and stored by the content broker process 120 on the content broker hosting service 110. The device profile table 210 maintains a list of the devices registered to ascertain its physical characteristics and capabilities to play distinct types of content. The media asset table 230 maintains the list of content that has been purchased by the consumer and is managed and stored by the content broker hosting service 110.

[0017] In the device profile table 210, each device is associated with a unique device identifier 212, which may be the MAC address of the device or some other identifying characteristic such as a serial number. The device type 214 is a general description classifier for the device, to assist in ascertaining usage and media format playback capabilities. A device characteristic 216 defines whether the device is stationary or portable. A memory base address 218 and memory high address 220 define the available memory range and addresses to assist the content broker 120 in determining the feasibility of delivering specific content files to the device. The base address 222 of the first free (unused) memory block of the device is maintained to locate the root block of a linked list of unused memory blocks. The memory type 224 defines whether the memory is permanently resident in the associated device or whether it is removable. The media types supported 226 contains a list of the various media formats that can be played by the device. The media management attribute 228 states the mode of operation of the device,

whether the device is the current media management server master, media management server slave, or a media management client device.

**[0018]** In the media asset table 230, each unique media file is identified using a unique media asset identifier (ID) 232. The title of the media asset 234 and a category stipulation 236 facilitate searching for media files of interest. The media file type 238 helps the content broker 120 determine whether specific devices the user owns have the capability to play the media. The media characteristics 240 define the format of the content, including audio and video fidelity. Usage rights 242 are also included in the media asset table 230. A license key 244 is a database address of the location of a binary large object containing the actual license key issued by the content provider. This key is saved to facilitate validating the original purchase with the third party content provider should it become necessary. The purchase date 246 and a unique distributor purchase ID 248 further define the original purchase transaction and distribution source. In addition, a unique content ID 250 supplied by the distributor facilitates re-obtaining the content if necessary. Finally, a distributor ID 252 identifies the original supplier of the content. This ID can be used to negotiate a subsequent retrieval of the content if it is lost or destroyed.

**[0019]** It should be noted that the preferred embodiment may optionally include storing an original archive copy of the content purchased. Even if the content broker hosting service maintains copies of the content in its disk storage 116, there may be cause to re-negotiate with the third party content providers 140, 142, 144 to obtain new usage policies and associated digital rights license keys, or to obtain a modified version of the content in a different media format so it can be played on a different device.

**[0020]** FIG. 3 depicts an exemplary method of a content hosting service 110 aggregating titles of content from various third party suppliers 140, 142, 144 and hosting said titles on its own web server 122. As shown in step 302, the user would first “sign on” to a hosting service by providing single sign-on credentials to the single sign-on identity server 118. The “sign-on” includes a user name and other verification information such as a password or biometric data. The single sign-on information lets the user federate the

user's identity with other third party providers 140, 142, 144 and the content hosting service 110. The user can browse the content list stored in the web server 122 and request an item to be purchased, as shown in step 304. As shown in step 306, the content broker process 120 communicates with the third party content provider 140, 142, 144 using standard web services protocols (e.g. Web Services Description Language (WSDL), Simple Object Application Protocol (SOAP), Extensible Markup Language (XML)) to request a purchase of the content. As shown in step 308, the content broker 120 may provide device profile characteristics stored in the device profile table 210 so the content provider can determine a proper media format to deliver to the user. In step 310, the content broker 120 receives the header information (content title, category, media type, usage rights, unique content ID) pertaining to the content that will be provided, and in step 312, the content broker 120 receives the binary content along with the associated license key that defines the usage rights obtained from the user directly from the third party provider 140, 142, 144. As shown in step 314, the media parameters are stored in the media asset table 230, and the content itself is optionally archived in the hosting service's content disk storage 116. As shown in step 316, the content requested is then downloaded to the Internet accessible device of the consumer by the content broker hosting service 110.

[0021] FIG. 4 depicts another exemplary method of a content hosting service 110 supporting requests from various third party content suppliers 140, 142, 144 as a user with a single sign-on account at the content broker hosting service 110 browses other sites directly and decides to purchase content. As shown in step 402, the user would first browse the content available on the third party site 140, 142, 144 and request an item to be purchased. As shown in step 404, the third party site 140, 142, 144 would use the single sign-on credentials to determine if the user had a subscription with the content broker hosting service 110. Once validated, as shown in step 406 the content broker process 120 handles requests for device profile information if needed, and provides enough details on the various devices the user owns so the third party 140, 142, 144 can query the user directly with regard to what device(s) shall be used to consume the content. Using standard web services protocols (e.g. WSDL, SOAP, XML) the third party

and the content broker 120 communicate information relating to the content that shall be stored in the media asset table 230, as shown in step 408. As shown in step 410, the content broker 120 receives binary content along with the associated license key that defines the usage rights obtained by the user from the third party provider 140, 142, 144. As shown in step 412, media parameters are stored in the media asset table 230, and the content itself is optionally archived in the hosting service's content disk storage 116. As shown in step 414, the content requested is then downloaded to the device of the consumer by the third party provider 140, 142, 144.

**[0022]** FIG. 5 depicts an exemplary method of the content broker hosting service 110 negotiating on the user's behalf to obtain a new copy of content that was previously purchased by the user. In step 502, the content broker 120 receives a notification from the user that a media asset has been lost, or perhaps the content itself and/or usage rights are to be modified to support playing the content on a different device. As shown in step 504, the content broker 120 scans the media asset table 230 to determine the original third party source of the content, by way of the distributor ID 252. In step 506, the content broker 120 uses web services protocols to communicate with a service provided by the third party provider 140, 142, 144 to provide the purchase date, unique content ID, and original license key issued by the third party provider. As shown in step 508, a reason for the content broker's 120 request may be communicated, such as whether the content was lost or whether the user desires to change rights policies with respect to the media asset. In step 510, the content broker hosting service 110 can optionally inform the user of any potential monetary charges associated with re-obtaining the content or changing the user's rights policies, and receive an acknowledgement from the user prior to proceeding. In step 512, the media file and new license key(s) are received from the third party provider 140, 142, 144 and made available for download by the consumer. The content broker 120 then updates the media asset table 230 with the new usage rights 242, license key 244, purchase date 246, purchased ID 248, and content ID 250, as shown in step 514.

**[0023]** The above disclosed subject matter is to be considered illustrative, and not restrictive, and the appended claims are intended to cover all such modifications, enhancements, and other embodiments which fall within the true spirit and scope of the

present invention. Thus, to the maximum extent allowed by law, the scope of the present invention is to be determined by the broadest permissible interpretation of the following claims and their equivalents, and shall not be restricted or limited by the foregoing detailed description.